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## THE APPLICATION OF STATISTICS TO ADVERTISING AND MARKETING.

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When one mentions the term statistics, people are wont to associate with it the economist, the social worker, the government official, the college professor, or perhaps the insurance statistician, the financier, and the like. But the business man engaged in the manufacture and sale of some product, is rarely thought of in connection with the uses of statistics. And yet, statistical data and research methods have assumed vital importance and have been extensively used in various phases of business life. Business executives are not only searching for and utilizing the figures compiled by the national and state governments and other bodies, but are also themselves gathering and tabulating statistical data germane to their business. This is particularly true in the fields of advertising and marketing, to which this paper will be devoted.

The uses of various kinds of statistical data for the determination of markets, the application of statistical methods for checking up results, for apportioning sales quota, for measuring competition, for laying out advertising plans and selling campaigns—*specific instances* of how statistical methods and data have been used for these and other purposes will be presented below.

*Attitude of Business Men toward Statistics.* Nor does the business man refer to statistics in a slighting manner. On the contrary, he is attaching more and more significance to the possibilities and utility of statistics. Let me quote several items to bring out this point.

In an address before the teachers of advertising at the 1916 convention of the Associated Advertising Clubs of the World, S. Roland Hall, advertising manager of the Alpha Portland Cement Co., quoted a number of passages from letters that he had received from advertising and sales executives in answer to the query as to what they expected from students who

completed courses in advertising. Among the replies was the following:

They (those who have studied advertising) are inclined to emphasize the copy side and entirely overlook the statistical and research work that is an indispensable preliminary. I think that teachers might do well to teach students the usefulness of graphs and charts, train them to investigate, to ascertain populations in given groups, sales possibilities, etc. They should be shown how salesmen are routed by maps, and how selling effort generally is organized and directed.

The following passage, from an editorial in *Printers' Ink* of March 30, 1916, a weekly magazine for advertisers, is also indicative of the same attitude.

Uncle Sam is an indefatigable gatherer of statistics, and the publications of the Departments of Commerce and Agriculture are veritable mines of facts and figures which have been compiled at the public expense, and which are supposed to be for the public benefit. The usefulness of all this matter, however, is nothing like what it might be if it were properly brought to the attention of those who might make profitable use of it. Unless a business man himself takes the initiative, and writes to Washington for information, he is not likely to appreciate the broad scope of the work which is actually being done for him by the government.

Then, referring to a booklet issued and circulated by the Census Bureau, directing attention to publications of a statistical nature of possible use to business men, the editorial concludes:

We are glad to note that the need (that is, for publicity of statistical data) has at last been recognized by one government official at least, and we hope the practice will spread.

Another interesting indication of the attitude regarding statistics for business purposes, is the growing use of statistical terminology. Thus, in *Associated Advertising*, February, 1916, an article contains the phrase, "a movement which looks toward reducing the business death rate" etc. Again, in the March, 1916, issue of the same magazine, there is an editorial on the efforts of the Ingersoll Cost Accounting Committee of the Associated Advertising Clubs of the World, containing such phrases as the "high business death rate" and "when the

desired *figure facts* are obtainable, it will be possible to arrive at various *safe averages* for income and outgo," etc. In an interview reported in *Printers' Ink*, April 15, 1915, W. H. Ingersoll is quoted as saying: "The vital statistics of a business or department, like the vital statistics of a nation or government, may best be concentrated for preservation in the form of graphic charts." While passages of this kind can be said to be incidental, yet they are significant of the attitude of business men on this subject.

The general manager of a concern manufacturing talcum makes the following comment on the lack of statistics in that field as compared with other lines of business, *Printers' Ink*, Feb. 3, 1916:

But in the talcum business, it has been altogether different. There have been no statistics, no appreciation of the real and possible demand, no accurate knowledge of per capita consumption. We are all of us, even the largest, losing far more by secrecy than we would gain by a free interchange of data and opinion.

At a meeting of the Advertising Club of New York, in March, 1916, John Lee Mahin proposed what is really the statistical method for measuring the "good will" produced by advertising. He said, as reported in *Printers' Ink*, April 6, 1916:

First we can measure the amount of money spent over a period, say, of three years. We can take the amount of space and picture it by the graphic method. Then we can put against it the total amount of space it bought. We can cut that space up and say that a certain large percentage of it has been put into the propagation of the ideas. And that another smaller portion of the space, say, 5 per cent., has been devoted to making the street location of the house known; and 2½ per cent. to a name that fits the tongue easily or a mark to identify it; and 5 or 10 per cent. more to more or less inconsequential things.

I say we could do that with more or less facility. We could do it also with competitive articles and check the good will of these against the good will of the goods in question.

But that is not all. We could then send out into the field and canvass large enough groups of typical consumers and those who have influence on consumers and in this way get an *accurate approval of the state of mind* of those consumers and confidently believe that they are representative of the whole

mass of consumers. We should never lose sight of the fact that the opinions, desires, preferences of the consumers are *facts*.

Just one more reference of this kind, an editorial from *Printers' Ink*, June 29, 1916:

Indeed, the whole trend of the advertising business is straight away from the old methods of trial and error, and toward an even greater dependence on facts and figures. Nowhere is that fact more apparent than in the increasing use of statistics, which often indicate the advisability of a change in tactics before it becomes painfully evident in the sales total.

The foregoing passages are quoted to indicate, at the very beginning, the seriousness with which business men regard statistical data and methods as applied to their respective fields. Let us now pass to a consideration of a number of *actual instances* of the uses of statistics by the three following elements of the field of advertising—the advertiser, the advertising medium, the advertising agency. In citing the various instances, I have preferred to have those who have utilized statistical methods tell their own story in their own words, and have therefore quoted rather extensively.

#### USES OF STATISTICS BY ADVERTISERS.

The use of statistics by a manufacturer is well exemplified in the case of Robt. H. Ingersoll and Bro. in an interview reported in *Printers' Ink*, April 15, 1915:

In these days of aspiration for scientific management every executive is trying to get his business on a measurable, analyzable basis. The original unit of comparison for determining this almost always has to be the productiveness of the individual salesmen. Afterwards the measuring-stick is the territory. The Ingersolls are now coming to the third standard, units of population; a variation of the territorial idea, but yet a variation. The company now sells 46 or 47 watches per thousand of population; two or three per thousand in secluded sections, 100 or more per thousand in cities, but about 46 or 47 per thousand the country over. But how much *ought* it to sell?

To know the number of watches sold per thousand and the cost per thousand gives a much broader and sounder basis than the other way. We ask how many can be sold? The life of the average watch is so many years, and in that we

include breakage and loss. Replacement is so much, competition is so much. The relations of wealth and poverty, of factory and commercial and agricultural communities, are all figured in. Averages are found for state, sections and the country as a whole.

With these in hand we can turn around and make local investigations with entirely new and highly important resources of inquiry. Why are the sales per thousand greater in this place than in that? Why should it cost more to make fewer sales there? Territories show up in new light, in better focus, and we can see whether the need is primarily for one kind of help or for another, this kind of appeal or that.

So important do some people consider statistical research in its application to business problems, that they believe in the existence of a separate department for the sole purpose of conducting work of this kind. Thus, Chas. C. Parlin, Manager of Division of Commercial Research of the Curtis Publishing Co., in an article in *Printers' Ink*, October 22, 1914, entitled "Why and How a Manufacturer Should Make Trade Investigations," advocates the creation of research departments by manufacturers. A few paragraphs from this article will indicate the utility of statistical data for the purposes indicated:

Today the supply in most lines has caught up with the demand and a third very important function devolves upon the manufacturer; namely, to develop his markets. This function involves first of all a thorough knowledge of his existing markets and of all those influences which are operating to affect them. It seemed natural enough in the earlier stages of industrial development for the manufacturer to confine his attention to the making of goods and to entrust to an outside sales organization the second function of getting the goods to the consumer. It is still advantageous in many lines for the manufacturer to reach the retailer through jobbing connections, but no manufacturer, however efficient and honorable the middlemen handling his product are, can afford to be without firsthand knowledge of his markets. Every manufacturer should know where his goods are sold, who buys them, and why they are bought, what type of men are selling his goods to consumers, what influences are affecting them, what their sales methods and sales costs are, to what extent they are real factors in making sales and to what extent they are only order-takers.

Every manufacturer should know whether he has a uniform distribution or whether there are certain sections and communities within sections where sales are subnormal; many manufacturers reaching the retail trade through middlemen seem to have very little of this information.

Mr. Parlin states further:

A certain manufacturer in the central west was interested primarily in breaking into the New York markets; research showed him that totally neglected at his own door there lay a larger market easier to get and likely to prove more profitable than the coveted New York market; research showed another manufacturer that his distribution was far from uniform, another that he was restricting his line to jobbers when the possible sale for his goods was almost confined to those stores which aimed to buy direct; another who sold only direct that a major portion of the opportunities in his field could be best reached through jobbing channels.

As regards the scope of commercial research, Mr. Parlin states:

Research work should not only be dominated by honesty of purpose, but it should be conducted from the student standpoint of truth for truth's sake. Lines of inquiry that appear likely to prove of practical value should, of course, be pursued. But that which appears academic should not be neglected, for it frequently happens that what appears to be academic turns out to be highly practical, while something which appears likely to be practical turns out to have little value. . . . Commercial research work involves three distinct phases: First, library work; second, field work; third, formulating conclusions.

The first step naturally is the study of printed sources, such as the census reports and other government publications. The research department may often throw light upon a business by merely graphing census figures. Often we have found a manufacturer with the latest census reports at his elbow, but deeply interested in maps and graphs of the same census material as it applied to his own business, indicating, that while he had perhaps read the figures, they came to him in a new light as he saw them graphed.

In advertising and selling, as in vital and social statistics the importance of reducing figures to a rate per hundred or thousand basis has been recognized. Says C. C. Casey in an article, "Graphic Sales Pictures That Analyze the Business," *Printers' Ink*, January 20, 1916:

Many of the big sales organizations use the "quota" system in compiling certain of their sales and advertising statistics, and these figures remove some of the inequalities of territorial or agency sales.

The quota in Arizona, may, for instance, be ten sales a month and in New York ten times as many, but the tabulation would show, not the *sales*, but the *per cent. of sales to quota*—75 per cent. of quota in each state would indicate equal comparative results, even though it did only mean that Arizona made  $7\frac{1}{2}$  sales and New York 75 sales.

The most graphic method, however, of showing sales or advertising by territories, or by states, or by salesmen is the "per prospect," "per hundred prospect," or "per thousand prospect" method. . . .

If you say that the Arizona sales organization—whether it be salesmen, jobbers or dealers—sold 333 units of your product per thousand prospects in a year and New York sold 111 units, the comparison has a "Jim Jeffries punch" which is likely to jar somebody into demanding a reason.

Another instance of the use of statistics and the rate method was recited by N. C. Kingsbury, Vice-President of the American Telephone and Telegraph Co., at the 1916 convention of the Associated Advertising Clubs of the World, reported in *Printers' Ink*, June 29, 1916. Mr. Kingsbury said:

Our national advertising campaign began in June, 1908. . . . For the five years of 1904 to 1908, inclusive, we gained 1,690,078 subscribers, and this gain was 1.72 telephones for each hundred of the total population of the United States. That was before our advertising campaign began.

Now let us take the period from 1908 to 1913, inclusive, omitting, as you will note, the years 1914 and 1915 in order to avoid the effect of abnormal conditions due to the European war. During these five years, while our advertising campaign was in progress, we gained 2,199,964 stations, and that gain was 1.95 telephones per 100 of the total population of the country, so that during the period covered by our national advertising the gain in telephones was .23 of 1 per cent. greater than during the period when we were not advertising. If you will apply this .23 of 1 per cent. to the total population of this country you will notice it represents a large number of telephones. And this gain was made in spite of the fact that the possibilities for new business were considerably less in the latter period than in the former period.

Another very interesting instance of the use of statistics



was described in an article entitled "Testing the Value of Inquiries," also by C. C. Casey, in *Printers' Ink*, January 27, 1916. The advertising of a firm manufacturing machinery was adversely criticized by the management on the score of poor sales results in following up the inquiries with salesmen. So critical did the matter become that the discontinuance of further advertising was being considered. Whereupon the advertising manager made a thorough statistical analysis of the records of inquiries and sales, and presented his results in both tabular and graphic form.

The *length of the sales lines*, showing sales per thousand possible customers, *followed the length of the advertising lines*, showing inquiries per thousand possible customers.

When inquiry lines were long, showing a large number of inquiries per thousand possible customers, sales lines also were long, and *vice versa*—in a manner that was graphic.

There were many variable elements, of course—greater efficiency of men, better crop conditions, and a lot of other things—but the *tendency* was for sales to "grow thick" exactly in proportion as advertising inquiries were "planted thick."

In other words, even though salesmen ignored inquiries, their prospect list as a whole was educating itself to buy, and was buying freely or rottenly in proportion to the number who could be induced to write the company for more information.

Another instance of the use of statistical analysis for determining the value and nature of inquiries, was presented in a talk before the Adcraft Club of Detroit by Edwin A. Walton, Advertising Manager of the Burroughs Adding Machine Co., reported in *Printers' Ink*, Nov. 4, 1915:

Our analysis of our business experience, covering hundreds of different letters, folders, magazine advertisements on every phase of our business, proves definitely and conclusively four things:

First: The more educational our message, the fewer the inquiries.

Second: The more Burroughs machine we talked, the fewer the inquiries.

Third: The more mere curiosity we excited, the greater the number of inquiries, and

Fourth: The more valuable looking the free booklet we offer, the greater the number of inquiries.

*Statistics as a Guide for Copy.* The realization of the above facts gave the Burroughs Adding Machine Co. also a splendid guide as to the kind of copy that was best suited for their purposes. Again, to quote Mr. Walton:

Now we are reasoning this way in our advertising, that if the prospects in the country, numbering two million or more, really knew what a Burroughs would do for them in the way of saving time, insuring accuracy, and giving them without any cost the facts and figures of their business, on which to build better profits—if they really *knew* this, they would be clamoring to buy. They would mob our hundred and seventy offices around the country. They would be sitting on the doorsteps in the morning waiting to buy machines. Now that's the truth. If they only *knew*. We believe that. It is, then, an educational problem.

A further excellent instance of the use of the statistical method for obtaining a guide for copy, was the recent prize contest on the uses of Bon Ami. Says R. S. Childs, general manager of the Bon Ami Co., in an article in *Printers' Ink*, August 10, 1916:

The prize contest had considerable value, however, in fulfilling its *primary purpose of business research*. The traditional theory of the uses of Bon Ami, on which our advertising copy rests, is based on very illusive data. . . .

By tabulating the replies we produced a big chart, showing the seventy leading uses for Bon Ami and to some extent this chart guides our advertising. It leads us, for example, in an advertisement showing the cleaning of a bathtub to put a can of Bon Ami powder, rather than a cake, into the hands of the model, whereas in a window- or mirror-cleaning advertisement we take pains to show a cake, there being a clear preference on the part of housewives along these lines in the prize-contest returns.

*For Figuring Advertising Appropriations.* The statistical method is used extensively in determining advertising expenditures and appropriations, especially with regard to the localities and mediums in which to advertise. For example, Lee Anderson, in an article, "Some Suggestions on Handling the Advertising Appropriation," *Printers' Ink*, June 22, 1916, recites an instance of the study of a certain advertising problem in which he found that, "with 65 per cent. of his distribu-

tion in towns of 5,000 and under, the advertiser was spending 85 per cent. of his appropriation in publications whose circulation was in cities of 25,000 and up."

The following is another instance of the use of the statistical method in the consideration of the advertising appropriation of a national advertiser. To determine how much should be appropriated by this firm for advertising in its various territories, it was proposed to make a test over a period of two or three years by running advertisements in certain territories operated by this firm, and by not advertising in other territories, and then checking up the results. The article describing this analysis, "The 'Saturation Point' in Advertising Expenditure," by C. C. Casey, in *Printers' Ink*, September 9, 1915, is here quoted as a particularly good illustration of the intensive use of statistical methods:

In an analysis, however, to find the right territories, it was discovered that some territories already had been receiving more advertising than others, both in the magazines, because of varying circulation, and in the varying attitude of mind of the different branch managers toward advertising.

When this discovery was made, the territories were sorted into six groups, according to the amount of advertising done in each. The amount of advertising was at first taken as the number of prospective customers reached (and the number of times reached) both by mail and through the magazines.

This, however, was not found satisfactory because of the varying kinds of advertising used and because of variation in circulation of the magazines. . . . A better method was found in taking the *inquiries* received from the advertising for each territory, ignoring those received direct by the branch managers, that is, those not coming through the home office. . . .

Because of the varying number of inquiries and the varying number of prospective customers in the different territories, it was decided to reduce the inquiries per territory to the "inquiries per thousand prospective customers" in each territory. This was done by dividing the total number of inquiries in each territory by the number of thousand prospective customers in each territory. . . .

The territories were then regrouped into six groups, according to the amount of advertising done. In group 1 were put all agencies with less than 100 inquiries per thousand prospective customers; in group 2, all who had between 100 and 150;

group 3, all between 150 and 200, and so on until group 6, which had all territories that had more than 300 inquiries per thousand prospective customers.

Then the total sales were taken for all the agencies in each group, and these being divided also by the number of thousand prospective customers in the group of territories, gave the sales per thousand prospective customers in each group.

Then the amount of these sales was obtained by multiplying by the average sale price and the total in dollars was used as a basis to estimate percentage of the advertising cost.

Enough of this article has already been quoted to show the intensive use of statistical methods in the case in question. The following paragraph from a series of articles in *Printers' Ink*, in 1915, is also indicative of the application of statistics in determining the advertising appropriation:

It is a fact, however, that the ratio between advertising expenditures and gross sales, when it can be obtained in the form of an average for the entire industry or the major part of an industry, may be very useful. The concern which is able to approach the subject of an advertising appropriation with the knowledge that the normal or average advertising expenditure in its field is 7 per cent. of its gross sales will find its problems materially simplified. Its analysis of the market with respect to its own product will indicate wherein that normal average must be exceeded, and wherein it may reasonably be expected to prove adequate.

George F. Lord, Manager Advertising Division, Du Pont Powder Co., in discussing the problem of advertising appropriations in *Printers' Ink*, March 4, 1915, states:

I am convinced that more failures in advertising are due to lack of analysis of conditions than to any other reason. For lack of such analyses many concerns that sadly need advertising fail to use it, some advertise who should not, and many advertise "too much, too quickly," creating sales demand they cannot meet.

An analysis of a business along the lines here suggested will often develop unthought-of possibilities of expansion or obstacles to success that must be surmounted or circumvented before an advertising campaign can succeed.

He then presents a very comprehensive list of items, the filling in of which would involve the utilization of statistical

data already compiled, or the conducting of new investigations to obtain the necessary information.

*Studying Competitive Advertising.* A most novel and interesting example of statistical analysis is contained in a study of the competitive periodical advertising and literature of several firms in the same field, described in an article in *Printers' Ink*, October 14, 1915, entitled "Sizing Up the Other Fellow," by S. W.:

To get down to practical issues, the analysis divided itself into three parts. One took up the advertising, national and trade, of all the companies in the field; the second regarded the sales-promotion booklets sent out from various offices in response to inquiries of dealers and customers and distributed through dealers, jobbers and salesmen. This included sales promotion methods. The third part concerned the talking points used by various other companies in putting forth the advantages of their respective chests.

The work of finding out about the national advertising of competitors was simple. This part of the analysis came, almost completely covered in detail, from the offices of various magazines willing to give the data. It resolved itself into securing the space requirements of each company as the information was given by the leading national magazines.

The data thus furnished was worked up in chart form, of which the author of the article states:

The value of such a chart, since practical value is the real object, could best be brought about and "cashed in on" after a second year. Comparative statements are always more valuable than simple figures. By comparing what a company has done one year with what it did the preceding year, a person can get a fair idea whether the company is increasing or decreasing appropriations and thereby judge, in a crude but somewhat definite way, whether the company has gone ahead or behind.

Charts were also worked up for the second part of the investigation, which dealt with booklets, correspondence, and other sales-promotion methods of competitive companies:

The use of such a chart is simple: it shows at a glance, how much follow-up work other companies are doing, how much material they send out and the interval of time between letters. Then, it can be judged with some accuracy which of the companies are enjoying success in proportion to the efforts put forth. . . .

Two such charts, one for each of two successive years, would enable a company to judge which of its competitors had particularly increased its efforts in such direction and so a company would be able to tell something of the progress in organization and promotion work made by competitors. So it would happen, as years passed, that these charts would increase in value, each one of them showing up some change in the methods of various companies: then as one or two of the companies might advance far ahead of the others, or drop back, the reasons could be conjectured with a degree of exactness. This, indeed, is a laboratory method of investigation.

As to the third part of the investigation, dealing with the talking points used by the various companies, the following passages will be of interest:

After taking each company separately and listing its talking points and the number of times each point has been used in folders, booklets, national advertising, and miscellaneous respectively, then it was advisable to have a summary made of all the talking points regardless of the companies using them.

The final part of the analysis made under section three was to give in simple, terse manner the exact methods of approach of various companies. . . . Methods of attack and appeal were thought out with newer vision after that investigation was completed.

As for the results and value of this investigation, the following conclusion speaks for itself:

It was practical in that it put into usable form what all the competitors in the field were and are doing in way of sales-extension work, sales-promotion work, and efforts to get new and repeat business. The investigation developed in itself a good bundle of notes and ideas and plenty of new suggestions as to methods for reaching and coöperating with dealers, and some eye-opening facts regarding merchandising methods and principles.

*Analyzing and Locating Markets.* Statistical data and investigations have also proved of much value for purposes of analyzing and cultivating present markets, and for discovering and locating new markets for merchandise. The instances already cited of how the Ingersoll firm uses statistics and the suggestions of Mr. Parlin are good examples. Several other cases of interest may also be given in this connection.

An interview with F. D. Gould, Retail Sales Director of the Regal Shoe Co., reported in *Printers' Ink*, April 26, 1916, refers to a certain change of plan in the general sales policy of that company. The following paragraph from that article is significant of the use of statistics in dividing the country into districts or zones.

Immediately it became apparent that any plan of this kind could not be operated from the Boston office. So, after an analysis of conditions, the country was divided into fifteen zones, following the distribution of the per capita wealth of the country, population, and so far as possible, the lines of present Regal district boundaries.

The following quotation from an article in the June, 1916, issue of *Associated Advertising*, entitled "Selling Lessons from the Shop," by Edward S. Babcox, Advertising Manager of the Firestone Tire and Rubber Co., is also illustrative of the use of statistical data for market analysis:

In a certain city the other day, I talked with a man who was erecting a wonderful garage. When I first saw him he was planning to take care of several thousand motor trucks. He was surprised when I showed him after a little analysis and investigation, that there were only 600 or 700 trucks in his whole territory, and that he could not hope to get business from more than 10 to 20 per cent. of these. These facts caused him to alter his plans.

In a big national marketing problem, the sales manager must analyze his field just as carefully. The United States Census figures provide unlimited information and enable him to assign sales quotas to each territory in an intelligent and accurate way.

He knows, for example, that there are about 5,500,000 families in the United States having an income of \$1,200 and about 3,250,000 families with an income of \$1,800 or more. If we consider \$1,800 the minimum income for an automobile-owning family, statistics prove that the field is 59 per cent. developed. If you work on the \$1,200 basis, the field is 35 per cent. developed.

The live sales manager knows there are today about 1,750,000 automobiles in the United States. He knows there are 10,000 in St. Louis, for example. He knows there are 23,295 people in St. Louis who can afford an automobile, and he knows that about 43 per cent. of these possible automobile buyers now own one or more cars. With these figures to guide him, he can direct successful selling efforts in St. Louis.

The American Radiator Co. is another concern that has utilized statistical data to excellent advantage in planning local advertising campaigns in certain territories. Louis Bruch, Vice-President of the Company, gives an interesting statement in this connection, in *Printers' Ink*, April 8, 1915:

Before we will consider putting on a campaign in a certain city there are many facts we must know. We want to know how prosperous the community is. For example, we are now considering adding papers in cities dependent on potteries. Potteries are very busy these days—busier than ever before—on account of the favorable tariff and war conditions. We want to know what the bank clearings are; if the locality has any advantages in the way of better soil or crops, mining property or other things which make for continued prosperity. We want information as to the make-up of the people so that we may know if they are of a type that will respond to our advertising; what kind of farming is done in the surrounding country; all the figures and facts available about the earning power of the residents; what kind of homes they have, and other data of a kind which will help us to determine in advance whether or not it would pay us to put on a campaign.

Proctor & Gamble also base their sales policies on actual market facts, ascertained by a study of conditions as they are in the field. In an article by S. C. Lambert, in *Printers' Ink*, April 27, 1916, appears the following passage:

There is the widest possible variation in the methods of marketing Ivory Soap and Star Soap, for example, and Crisco requires a still different combination of methods. Each campaign is based upon a study of conditions as they actually are, not as they were forty years or so ago when Ivory Soap was a new brand. This constant and intensive study of actual conditions, with the resulting adaptation of the selling campaign to fit the conditions, are the features of the company's work which have greatest interest for manufacturers in other lines.

A final instance that I shall cite of how the statistical method was used in analyzing a market is the case of Novo Engines, described in an article, "Saving a Business by Switching to New Market and Plans," *Printers' Ink*, May 27, 1916. In this case an analysis brought out the advisability of entering the city market, whereas theretofore only the rural territory was cultivated.



It was found when the investigation had been completed that there was a variety of uses to which the new gasoline-engine might be put in the city. There was hoisting in the building and contracting trade. The big hoisting jobs on new buildings were done by big steam-engines or electric current. But there were hundreds and thousands of small hoisting jobs, too small to call for a large steam-engine, too small to warrant the whole time of an engineer and assistant, and too expensive when done by hand labor. . . .

Then there was the pumping to be done by builders, contractors, and engineers, such as getting the water out of a cellar or a ditch. One contractor paid four men two dollars a day each for several days to empty a ditch of water, and the Novo Engine with pump could empty in less than a day at a cost of thirty cents.

*An Intensive Study of Retailers.* R. P. Spencer, of the American Optical Co., gives the following account, in an article entitled "A System to Stop Guessing in Dealer-relations," *Printers' Ink*, May 18, 1916, of an exhaustive study that he made along the lines indicated by the title:

Some years ago, when I was merchandising tinware and enameled ware, it occurred to me that our salesmen knew a great deal about our retailers and our prospects that would be very helpful if we had it on file in the office. Such information could be used in many ways—in writing the individual retailer, in getting up circular letters, as guidance in establishing policies and in the successful handling of 101 details. On considering the subject further we saw that, while the salesman already possessed much knowledge about the retailer and his town, he could easily gather a great many other useful facts for us by asking a few questions and by doing a little observing. Charting these data on cards would give us a comprehensive bird's-eye view of the dealer, his store, his clerks and everything else that vitally concerned him. To get the required information we prepared a blank containing sixty-three questions. Our salesmen were requested to fill out one of these blanks for each merchant on whom they called. Of course all these questions were not asked in one trip, but answers were gradually compiled in several visits.

Then follows a list of the sixty-three questions which constituted *in toto* a most searching analysis of the conditions and merchandising methods of the retail trade. As regards the value of this analysis, the following passage is of interest:

Supposing we were planning a trade-paper campaign. By getting the answers from our cards to questions numbers 1, 2, 3, 4, and 5 we could know what publications to use and have a fair idea of the kind of copy to insert. If we were looking for new talking-points, the answers to question 10 would give us a mine of material. Answers to those questions about what our competitors were doing furnished us with a lot of valuable tips, both for the improvement of our products and of the methods used in marketing them. How could we prepare consumer advertising intelligently without referring to those cards again and again? In a word, how could we do anything, and be sure that we were right without consulting the facts recorded in our files? After we started this system and began to realize how valuable the information was, we saw that we had always been working in the dark before and had been guessing at things we should have known.

A similar instance of obtaining data regarding retailers is that of the Westinghouse Co., described by R. E. Dildine in *Printers' Ink*, May 25, 1916:

The advertising department has on file a salesman's report on every distributor, which contains detailed information that is very valuable as a basis for planning and distributing dealer-help material.

These data include, for example, such details as the number and size of the dealers' windows, size and location of the store, the class of customers, the number of clerks employed, the mediums of local advertising employed and the kind of dealer-helps that are used and the way they are used.

These reports are a check on waste of advertising materials, as the company furnishes all of the usual selling-helps, such as street-car cards, posters, booklets and newspaper cuts.

*Miscellaneous Uses by Advertisers.* James Melvin Lee, Director of the Department of Journalism of New York University, sent a letter to a number of firms, and asked among others, the two following questions:

If you had at your disposal an investigator who was well qualified to dig for helpful facts, at what leading tasks would you set him?

What class of information has proved to you to be the most helpful in the past in enabling you to get results from your advertising?

The replies that he received, presented in an address before the American Association of Teachers of Journalism and re-

ported in *Printers' Ink*, April 27, 1916, are full of suggestions regarding the actual and possible uses of statistical data and research work.

J. M. Campbell of the Proctor & Gamble Company is quoted as saying:

Not one business house in a thousand knows the facts about its product—knows what there is about it that appeals to the public.

I happened to know of a very large manufacturer of a product which is used in a very considerable percentage of the homes of the United States. He has spent millions of dollars in advertising the fact that this product has such and such a quality. A house-to-house investigation covering 600 homes and an investigation through the mail covering over 1,000 women brought to light the fact that only one person had been influenced by the repetition for the last twenty years of that special feature of this advertiser's advertising. On the other hand, 80 per cent. of the women who answered our inquiry expressed themselves as wanting this particular advertiser to do such and such a thing, something which he was not doing and did not know his public wanted him to do.

R. P. Spencer, Sales Manager of the American Optical Co., stated that he was actually going to give to an investigator the following assignment:

I intend to make arrangements with a trained investigator to secure important facts which will enable us to plan a comprehensive sales-advertising campaign. In the first place, he will arrange with schools, factories, stores—in short, business institutions where work varies—to find out first, how many people are actually wearing glasses at the present time. Second, how many people should have glasses. Third, whether applicants for positions in these places have to pass any eye-sight test or answer any questions in regard to it. Fourth, whether an oculist is regularly employed to test the sight of the employees in the same way as most concerns have a doctor to look after the physical welfare of their employees. Fifth, to find out from wearers of glasses whether they have been influenced by advertising to ask by name for any particular kind of frame, mounting or lens. Sixth, to find out the percentage of people who have their eyes examined by an oculist and then take the prescription to an optician, and the percentage of people who have their eyes examined by an optometrist, who both examines the eyes and furnishes glasses. Seventh, to ascertain the percentage of people who are imprudent

enough to take a chance on their eyesight by buying glasses from the five-and-ten cent stores, fakirs, etc., without having their eyes examined by some one competent to do the work scientifically. To find out from the oculists, optometrists and opticians what trade-papers and scientific magazines they read, so as to make a tabulation by percentages of those which are most popular and the leading features of these magazines. Eighth, to secure information as to how much advertising is done by the oculists, optometrists and opticians, and the division of expenditure according to the kinds used and the usefulness of each kind. Ninth, to find out the source of supply of the oculists, optometrists and opticians, so that we may secure percentages as to which jobbers are the most popular and the reasons for their popularity. Tenth, investigation to be made with the optical jobbers to find out territories covered, selling methods pursued, advertising, etc.

#### USES OF STATISTICS BY ADVERTISING MEDIA.

All the instances thus far cited referred to uses of statistical data and methods by advertisers. They constitute one great unit in the advertising world. A second unit in the field of advertising is embraced in the term "media," that is, magazines, newspapers, trade journals, posters, etc. Advertising media utilize statistics most extensively for both administrative and research purposes. Let us consider some specific examples.

*Circulation Statements.* It is obvious that before an advertiser will sign a contract to use advertising space in a newspaper or magazine, that he will require a statement regarding the quantity and quality of the circulation. This is particularly important in view of the advertising rates now prevailing—a double page spread in a certain weekly costs \$12,000 for one issue. Obviously, the advertiser wishes to study this information as to circulation, and to make comparisons of one magazine or newspaper with another. This was a difficult task as long as each magazine and newspaper would make up its own statement in the way it saw fit. For example, some newspapers would include in their circulation all the copies printed, while the advertiser is interested only in the number of copies sold. Then again, the advertiser wants to know how much of the circulation of a newspaper is in the city, and how

much is distributed in nearby suburbs. Other data of this kind were necessary for valid comparisons.

Of much interest in this connection was, therefore, the organization of the Audit Bureau of Circulations which it is worth our while to describe in some detail, because its reports are tabular, statistical statements, pure and simple.

The Audit Bureau of Circulations issues uniform, standard, and audited circulation statements of those publications that are members to advertisers and advertising agencies that are members of the Bureau. Inasmuch as different data are required for different classes of publications, five forms are used, one for each of the following classes: daily and Sunday newspapers; weekly, semi-weekly, and tri-weekly newspapers; magazines; farm papers; and trade, technical, and class journals.

Each of these forms contains very comprehensive statistical data regarding the publication concerned. The magazine form, for example, gives both the average paid and unpaid circulation, and separates the paid into mail subscribers and sales through newsdealers. Lest a certain issue be quoted by the publisher, that because of a special feature had an inflated circulation, the publisher must show the variation in the circulation of the last five issues. Then there is a tabular presentation of the distribution of the circulation by individual states and by geographic groups, both as to mail subscribers and sales through newsdealers. In addition, there is a statement of the circulation in cities of 100,000 and over, in cities of from 50,000 to 100,000 population, from 25,000 to 50,000, from 10,000 to 25,000, from 2,500 to 10,000, and under 2,500. This enables the advertiser to know what percentage of the circulation is in large cities and what percentage reaches the rural communities, a most important item.

The publisher is also required to specify the particular class, industry, or field covered by his magazine, also to give such information as the percentage of renewed subscriptions, data as to subscribers in arrears, whether premiums are offered to subscribers, etc. In short, there is a complete analysis of the quantity and quality of the circulation. The trade journal form goes even further in stating how many subscribers are

owners, managers, wholesalers or retailers, and in giving similar pertinent information.

*Analysis of Advertising and Reading Matter.* Statistical methods have been used very extensively for purposes of analyzing advertising and reading matter. Thus, the May, 1916, issue of *Advertising and Selling* contains an article on "A Graphic Study of Six Years Magazine Advertising." This article describes a study based on the number of lines of advertising carried by 60 representative magazines from January, 1910, to March, 1916.

The Butterick Publishing Co.—publishers of the *Delineator*, *The Designer*, and *The Woman's Magazine*—ran two advertisements in *Printers' Ink*, January, 1916. One gave an analysis of the reading matter that appeared in these publications during 1915. All the reading matter was divided into ten classes, for example, the home, kitchen and table, fashion, etc. The number of agate lines devoted to each was stated, and the matter was presented graphically in circular form, segments representing the percentages of lines devoted to each topic. The second advertisement presented a similar analysis of the advertising carried by that company in 1915. Going even further, the Curtis Publishing Co. has a checking department, "which regularly examines all the leading publications and measures and records the amount of space used by each advertiser. From these figures are prepared totals by weeks, months and years, by individual advertisers and groups, by large-space users and small-space users, by types of publications, and by other classifications."

The *Chicago Tribune* published a comprehensive analysis of Chicago newspaper advertising, containing in both tabular and graphic form complete advertising records of all Chicago newspapers for 1915. Display and classified advertising are treated separately. Each important industry or line of business is given in considerable detail. For example, the section on Automobiles and Accessories gives the number of agate lines of this class of advertising carried in 1915 by each of seven newspapers, and gain or loss over the previous year. Then the figures for each newspaper are given separately as to gas cars, electric cars and accessories. There is also given an

interesting table, based on a poll taken by the Firestone Tire and Rubber Co., of the rate per line per auto owner for each newspaper. Other classifications, such as Department Stores, Groceries and Food Products, are similarly treated.

At the 1916 convention of the Associated Advertising Clubs of the World, Paul E. Faust, touching upon this general topic in an address on "How Newspapers Can Organize Their Market," said:

If a quarter of the income goes to wearing apparel products, it is evident that this is of great interest to the home. If 50 per cent. of the average income goes for foods, then food products can be seen to be a very live issue. If 10 per cent. of the income goes for furniture and house furnishings, it is reasonable to believe that these items are entitled to editorial attention so that the reader may be guided, counseled and given very much desired latest information on the subject.

He then quoted the figures of the *Chicago Tribune* on the amount of text devoted to various departments.

Realizing the importance of furnishing present and prospective advertisers with accurate data along definite lines of interest, The Curtis Publishing Co. instituted a Commercial Research Division, which has made a number of investigations of extreme interest. As to the functions of this Division, let me quote from *Obiter Dicta*, a Curtis house-organ:

Broadly speaking, the duty of this division is to ascertain, by personal investigation, the conditions, manufacturing and selling, that exist in various trades and industries, and to interpret these signs into statistical expressions of tendencies and future possibilities.

With this material in hand the Company's representatives may come to a manufacturer with something to give him that will be worth his serious attention—information as to the condition and extent of his national markets, facts that may suggest new merchandising methods, and tables and charts showing in graphic detail many points that before may have been matters for conjecture alone.

An instance of the work of the Curtis Research Division is an investigation of the textile field. In making this investigation, Mr. Parlin, the head of the division, visited 165 cities, conducting over 1,000 interviews, traveling over 32,000 miles. A year was spent in studying the textile industry, and the final

report consisted of four volumes—about 2,500 pages including over 100 charts and 12 maps.

Another interesting volume prepared by the Commercial Research Division is “An Encyclopedia of Cities” containing an estimate of the “trading” population and of the department store business in every city of the United States of over 5,000 population.

The encyclopedia is divided into states, with the cities in that state alphabetically arranged, and after each city is given the following information:

- (1) The census population
- (2) The native white population
- (3) The trading population (that is the census population plus the number of people living outside the city who *regularly* trade in the city, and minus the number of people living in the city who *regularly* trade outside the city)
- (4) The predominating nationality
- (5) The leading dry goods stores and their total estimated volume of business.

A most stupendous investigation of the automobile industry was also made by this Division. A four volume, 3,000 page report was the result. Among other reports of this Division are those on Food Products and Household Supplies, and Advertising Possibilities of Pacific Coast Industries. It is of interest to note that besides this Division for purposes of pure research the advertising department of the Curtis Publishing Co. also maintains a Statistical Division.

A case of similar research work conducted by a local newspaper is that of the *Chicago Tribune*. This newspaper, realizing that an out of town firm advertising or planning to advertise in the city of Chicago, would find it helpful to have definite data of local conditions, made a most thorough investigation of the city from various standpoints of business interest. This investigation is summarized in a book entitled “Winning a Great Market on Facts,” published in 1916. A few paragraphs from this book will indicate the detailed use of statistical methods:

It took work—and lots of it—time and money for the *Chicago Tribune's* Merchandising Service Department to break up the population of Chicago into so many separate units, to



study, analyze and classify these districts, to be able to say with positive assurance "We know" and be conscious that the information was not based on theory or casual investigation, but on block by block canvasses. . . .

It is for these reasons, then, that the *Tribune's* trained investigators, statisticians and merchandising experts divided this great city by the lake into 48 separate districts.

The *Chicago Tribune* through this Merchandising Service Department can give you the whole story of each of these districts, tell you the average rents, the buying habits of the tenants and how many Germans, Italians, Poles, etc., are in each district. In fact, put its finger on the hundred and one items of knowledge that determine why people buy and why they don't. . . .

By this we do not mean to imply that the *Chicago Tribune* has made a personal investigation of the buying and reading habits of each and every housewife in Chicago. But we have expended a fund of time and money in investigating a sufficient number of housewives in each unit of Chicago's population, so that the *Tribune* can furnish you facts and figures, based upon the law of averages, which have been proved correct time and time again.

The *Tribune* has analyzed the Chicago market even more exhaustively than it has Chicago's population. The number of dealers in each line and their locations by district (that is, exact information as to the character of their trade), as well as the attitude of the dealer, small and large, and department stores toward advertised products, new lines, established lines, window and inside display, demonstration, and other means of pushing sales—all this is part and parcel of the *Tribune's* fund of data.

Newspapers and general magazines are not the only media that advantageously utilize the services of statistical data and research. The same tendency can also be noted in other classes of advertising media. Thus, a poster advertising concern—the Ivan B. Nordhem Co.—in an advertisement in *Printers' Ink*, May 4, 1916, refers to its statistical department that furnishes valuable information for guidance in the selection of territory. A book issued by the New York Car Advertising Co. contains considerable data on the various boroughs of New York City and on the individual car lines. Trade journals also gather and publish data on the industries that they cover. Moreover, advertisers and advertising agencies are expecting trade journals to be of service along these lines.

Publishers of farm journals form another group that are enlisting the services of statistics. Thus, the "Standard Farm Paper Year Book for 1916," issued by the Research and Service Department of the company publishing the *Standard Farm Papers*, contains the following introductory statement:

In compiling the Standard Farm Paper Year Book for 1916, we have endeavored to give the buyer of advertising space a comprehensive collection of agricultural information in condensed form.

We are headquarters for reliable, detailed information covering the production, resources and purchasing power of the American farmer. Should you desire specific information on any special phase of the subject we will be glad to furnish data covering your individual requirements without obligation.

The book then quotes, extensively, from statistics compiled by the Census Bureau, the United States Department of Agriculture, and other sources.

Just one more instance of the use of statistics by farm journals. In February, 1914, the publisher of *Successful Farming* made formal announcement of the establishment of a Consultation Department. The following paragraph appeared in the announcement, showing that the new department was really to be a statistical or research bureau:

For many years we had hoped that some day we could increase the line of detailed and comprehensive information covering the resources, production and purchasing power of our field which we are furnishing our patrons, and give more data on the possibilities of merchandise development through the different channels that reach the farm home.

A most interesting accomplishment of this department is the set of so called Definite Data Maps. In the words of the publisher, these maps "comprise a thorough analysis of the buying power of the American farmer and the best methods of distributing goods to him. Compiled by counties they give information for any part of any state of the Union. And geographically, portray at a glance the general centers of production." At the time of this writing, sixty Definite Data Maps were ready for distribution, including the following general heads: Soil Elements, Farming Area, General Valuations, Crop Yields, Farm Livestock, Operation Expenses,

Farm Tenure, Merchandise Distribution, and Farm Paper Circulation.

As an illustration of the practical value of these maps, a circular published by *Successful Farming* gives the following suggestion for their use to the mail-order advertiser:

They will show him how he can most economically reach the different areas from which he can expect the most sales, where are found the best crop conditions, where the most money on deposit, where fewest retail dealers; as well as other essential things.

#### USES OF STATISTICS BY ADVERTISING AGENCIES.

The advertising agency constitutes a third unit in the field of advertising. The modern advertising agency is equipped to render the advertiser a very comprehensive and diversified service. It will plan and lay out the advertising campaign, conduct preliminary market and trade investigations, devise trade marks and packages, write the copy, attend to the art and printing, write booklets, select media, check results,—in short, an advertising agency is in a position to execute virtually every detail involved in the advertising and marketing of a product. Advertising agencies also utilize the services of statistics. In the first place, any of the instances of the uses of statistics by advertisers, described above, may be worked out by the agency in its service to the client. Then again, the “space buyers” of agencies make ample use of circulation figures in selecting the media for an advertising campaign. In addition, some agencies have established statistical or research departments for purposes of making market and trade investigations or other analyses that may arise in the course of their work. The following quotations present actual instances of the uses of statistical data and methods by advertising agencies.

In answer to a letter asking the editor of *Printers' Ink* what data agencies usually require in planning an advertising campaign, the editor states, in part:

In many cases the advertiser is unable to furnish all of the information wanted. On this account, of late years, it has become common for agencies to conduct extensive trade and

consumer investigations, sometimes costing thousands of dollars and taking months of time.

N. W. Ayer & Son, a very large advertising agency, makes the following statement in one of its advertisements:

Our Plans Department makes an analysis and test of every product we advertise. It thoroughly digests all information relative to its manufacture and distribution.

In this department we have unusually complete and reliable statistics for visualizing distribution of population and wealth in relation to distribution and selling of merchandise. Moreover, no trouble is considered too great to get additional facts for the intelligent building up of an advertising plan.

Joseph H. Finn, President of the Nichols-Finn Advertising Co., states in an editorial in the *Chicago Herald*:

Modern merchandising campaigns are often the result of months of preliminary work. The heads of the business, the sales manager, the advertising manager and the advertising agent give to these conferences the best that each has. The entire merchandising procedure is carefully laid out, the market is studied, the demand is analyzed. Accurate information is secured on per capita consumption: competition is weighed with full allowance for its strength; inquiry is made into the relative prosperity of different territories.

And finally, let me refer to the Mahin Advertising Data Book, which contains, as stated on its title page, "facts and statistics in condensed form for the man who has advertising and merchandising problems to solve." This book of 500 pages, consisting almost entirely of detailed statistics, summarizes the uses of statistics to the advertiser as follows:

Statistics can show the advertiser where to find the people he wants to reach.

Statistics can help the advertiser in selecting his advertising mediums.

Statistics can help the advertiser in testing to what extent he is actually reaching the people he is after.

*Report on Consumer Demand and Retail Conditions.* Most extensive in scope and detail, and of unique importance to the manufacturer, the retailer, credit man, banker, advertising, and sales manager is the second annual report on consumer demand, the data for which was secured and compiled under the direction of Mac Martin, Chairman of the Educational

Research Committee of the Associated Advertising Clubs of the World. The report was published in the January, 1916, issue of *Associated Advertising* and comprises a stupendous piece of statistical compilation and presentation. A few paragraphs showing the nature and scope of the investigation, will be of interest:

The committee has not attempted to express opinions. It has sought only to gather facts and to classify and present them in a form which would make them of the most use to business men.

To obtain this information we have gone to the retail dealers in the lines closest to the consuming public—department stores, groceries, drug, hardware, jewelry and clothing stores. We have also obtained reports of stock carried as compared with the same period last year. We have asked them how their collections stand, so you may know the tendencies of the average consumer in regard to prompt payment in the United States and Canada at the present time. We have asked these dealers to report in definite percentages the increase or decrease in the amount they are spending for their own advertising. Every deduction and every percentage has been triple checked. . . .

Our able assistants here in Minneapolis have given night and day . . . to steady work in an effort to present this information fresh from the books of the dealers from the Atlantic to the Pacific, and from the Gulf to Hudson Bay, in the shortest possible time.

The tables, graphs, and maps that are a part of this report contain a wealth of statistical material of great value to all in any way interested in the marketing or merchandising of any commodity.

*Uses of Graphs.* In going over the material on which this paper is based, the writer was impressed with the extensive use that is being made of the graphic method of presenting facts. The business executive has neither the time nor the inclination to ponder over tables of figures in order to digest them properly. He would much rather have the facts presented to him in a more intelligible manner—in pictorial or graphic form. As C. C. Casey puts it in an article entitled "Graphic Sales Pictures That Analyze the Business" in *Printers' Ink*, January 20, 1916:

Sales and advertising statistics should be "read" before they get to the executive. They should not be *statistics* at all, but *pictures*. The tabulator should be taught to give the executive the *facts* which *he* ordinarily expects to get out of the figures himself.

Says W. H. Ingersoll, quoted in *Printers' Ink*, April 15, 1916:

Graphic charts may be devised for any character of data and show in visualized form important relationships which cannot be gotten in any other way, nor can so much information be gotten in such limited space by any other method.

The vital statistics of a business or a department, like the vital statistics of a nation or a government, may best be concentrated for preservation in the form of graphic charts.

Numerous other quotations could be given to show the significance of graphs to business executives. As for specific instances, the graphic method was used extensively in the investigations of the Commercial Research Division of the Curtis Publishing Co., and in the *Chicago Tribune's* Survey of the city of Chicago. The Definite Data Maps, described above, are graphs, pure and simple. The report on consumer demand also has a very large number of maps and graphs, and besides there is the suggestion that

Hundreds of other maps and charts can be compiled from these figures. . . . For example, the increase in population, the weather conditions, bank clearings, building permits, saving bank deposits, war orders—all these may be charted in areas and compared with consumer demand, to the benefit of those whose special lines indicate such additional charts.

Graphs are being used to plot territorial sales and advertising, to correlate advertising expenditures with sales results, to show increases or decreases in business, to compare the results of different departments of a business, to trace sales during various months of the year in order to locate seasonal tendencies, and to analyze other significant conditions of a business. The writer has even observed the use of graphs in advertisements to the consumer. For example, a recent advertisement contained a graph plotting the percentage increases in the prices of certain materials during 1914, 1915, and part of 1916.

A most interesting adaptation of the graphic method by an advertising agency is the Hanff-Metzger "Maplan," a merchandising blueprint. The "Maplan" presents, in graphic form, the interrelations of all the elements and efforts involved in the merchandising and advertising of a firm or product. An idea of the scope and detail of one of these blueprints can be had from the fact that they have been made as large as fourteen feet in length.

In concluding this paper, it is well to repeat that the writer set out to present a number of *actual instances* in which statistical data or methods have been and are being employed to help in the solution of advertising, marketing, and merchandising problems. In order to do this most effectively, it was considered best to *quote* those who were availing themselves of statistical aid.

After going through all the material, the writer was considerably surprised at the great extent to which statistics were contributing to advertising and merchandising efficiency, even though some firms were only unconsciously utilizing statistical methods. And yet, it is the writer's most earnest conviction that statistics can and should be consciously employed by more firms, and more extensively by many firms already taking some advantage of this aid in solving effectively and accurately their advertising and marketing problems.